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Double Patenting

1. The Examiner's statutory type (35 U.S.C. 101) double patenting rejection of Claims 1 and 19 has been reviewed by the Applicants and upon allowance of the Claims a Terminal Disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) will be filed.

Claim Rejections - 35 USC §103

1. The Examiner's rejection of Claims 1-3, 7-10 and 19-20 under 35 U.S.C. 103(a) as being unpatentable over McQueeney et al. (US Patent No. 6,850,070) in view of Frus (US Patent No. 5,523,691), has been studied and the Applicants respectfully disagree with the Examiner's rejection. The McQueeney reference fails to teach an igniter which is fed by a power cable which is surrounded by a conductive shield connected to a system ground. McQueeney also fails to teach or suggest a method for detecting current pulses in the shield which is a shield around the power cable. Thus, it is clear that McQueeney fails to teach or suggest the method of detection claimed in Claim 1 which includes detecting current pulses in a shield surrounding the power cable. The shield 412 in McQueeney is on top of the coil-on plug (see column 6, lines 65-66) and does not surround a power cable that feeds an igniter. There is no aircraft igniter in McQueeney and the spark plug ignition system in McQueeney is limited to an engine having multiple spark plugs and a distributor which is not applicable to an aircraft gas turbine engine.

The Applicants disagree with the Examiner's contention that McQueeney discloses a detector (inductive sensor 400) for detecting current pulses in a shield 412. The Applicants refer the Examiner to column 6, line 59 through column 7, line

10. Here McQueeney discloses an inductive sensor 400 disposed directly over a coil-on plug 410. The inductive sensor 400 is used to detect the flux emanating from the core 418 of the coil-on plug 410 (see column 5, lines 9-35). Thus, it is clear that contrary to the Examiner's contention, McQueeney fails to teach detecting current pulses in a conductive shield of an igniter which is fed by a power cable which is surrounded by the conductive shield wherein the shield is connected to a system and the igniter is in an aircraft gas turbine engine as claimed in independent Claim 1 from which Claims 2-6 depend, independent Claim 7 from which Claim 8 depends, and independent Claim 9 from which Claims 10-13 depend.

The Examiner contends that Frus discloses (in FIG. 1) an apparatus/method using a coil for testing an igniter in an aircraft powered by a gas turbine engine (23) containing an igniter (igniters 1, 2) which is fed by a power cable; and an annunciator (display 51) for issuing a signal indicating presence of spark in the igniter to a user/pilot (Frus, column 1, lines 19-26; column 4, lines 5-7; FIG. 1). The Applicants have failed to find any mention in either the specification or FIG. 1 of a coil. Frus does not teach using a coil for detecting current pulses in a conductive shield of an igniter which is fed by a power cable which is surrounded by the conductive shield wherein the shield is connected to a system and the igniter is in an aircraft gas turbine engine as claimed in independent Claim 1 from which Claims 2-6 depend, independent Claim 7 from which Claim 8 depends, and independent Claim 9 from which Claims 10-13 depend. Frus does not teach using a coil for detecting current pulses in an igniter at all.

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Contrary to the Examiner's contention, the Applicants have clearly shown that a person of ordinary skill in the art would not find it obvious at the time the invention was made to modify McQueeney et al., to incorporate the inductive sensor 400 in an aircraft powered by a gas turbine engine containing an igniter which is fed by a power cable; and issues the signal indicating presence of spark in the igniter to a user/pilot in a pilot station in the aircraft, as taught by Frus, for the purpose of adapting the inductive sensor to other desired ignition system or engines, for extending the detection capabilities into low coil fields (see McQueeney reference, column 12, lines 31-37; column 12, lines 65-67; column 13, lines 1-5). The aircraft engine ignition system disclosed in Frus doesn't have a low coil nor does it produce a low coil field. There is no indication that one skilled in the art of gas turbine aircraft ignition systems would consider using the technology of an automotive engine ignition system which has a distributor feeding multiple spark plugs in multiple combustion chambers. Neither patent discloses detecting current pulses in a shield surrounding a power cable of an ignition system either directly or by induction using a coil.

The Applicants refer the Examiner to the MPEP 706.02(j) "Contents of a 35 U.S.C. 103 Rejection - 700 Examination of Applications" 706.02(j) Contents of a 35 U.S.C. 103 Rejection 35 U.S.C. 103 authorizes a rejection where, to meet the claim, it is necessary to modify a single reference or to combine it with one or more other references. After indicating that the rejection is under 35 U.S.C. 103, the Examiner should set forth in the Office Action:

(A) the relevant teachings of the prior art relied upon,

preferably with reference to the relevant column or page number(s) and line number(s) where appropriate,

(B) the difference or differences in the claim over the applied reference(s),

(C) the proposed modification of the applied reference(s) necessary to arrive at the claimed subject matter, and

(D) an explanation why one of ordinary skill in the art, at the time the invention was made, would have been motivated to make the proposed modification.

The Examiner failed to point out all the differences in the rejected Claims over the applied references. In particular, the Examiner failed to point out that the Rejected Claims teach detecting current pulses in a shield surrounding a power cable of an ignition system either directly or by induction using a coil while neither of the cited references do.

The MPEP further states "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the Claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on Applicants disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)."

The MPEP states that the initial burden is on the Examiner to provide some suggestion of the desirability of doing what the inventor has done and that to support the conclusion that

the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the Examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references. The Examiner has failed to do so primarily because the cited references do not teach detecting current pulses in a shield surrounding a power cable of an ignition system either directly or by induction using a coil as claimed in the rejected Claims. Clearly, the Examiner used impermissible hindsight to make the combination for the 103(a) rejections because none of the cited references teach detecting current pulses in a shield surrounding a power cable of an ignition system either directly or by induction using a coil as claimed in the rejected Claims and the only teaching of such a method is found in the present Application.

Therefore, the Applicants respectfully submit that the remarks above overcome the Examiner's rejection of Claims 1-3, 7-10 and 19-20 under 35 U.S.C. 103(a) as being unpatentable over McQueeney et al. (US Patent No. 6,850,070) in view of Frus (US Patent No. 5,523,691), and that Claims 1-3, 7-10 and 19-20 are now in condition for allowance.

2. The Examiner's rejection of Claims 4-6 and 11-13 under 35 U.S.C. 103(a) as being unpatentable over McQueeney et al. (US Patent No. 6,850,070) in view of Frus (US Patent No. 5,523,691), and further in view of Applicants admitted prior art, or William Hayt and Jack Kemmerly, "Engineering Circuit Analysis" (hereinafter referred to as Hayt et al.), has been studied and the Applicants respectfully disagree with the Examiner's rejection. As clearly shown above, the McQueeney

and the Frus references individually or taken together fail to teach an igniter which is fed by a power cable which is surrounded by a conductive shield connected to a system ground. They also fail to teach or suggest a method for detecting current pulses in the shield which is a shield around the power cable either directly or by induction.

McQueeney teaches using an inductive sensor for detecting an electromagnetic flux generated by a coil-on plug device during a firing event and generating and outputting a voltage in response thereto, and a signal processing circuit electrically connected to the inductive sensor for generating an output signal in response to variations in the voltage output by the inductive sensor. The rejected Claims don't detect an electromagnetic flux generated by a coil, the rejected Claims detect current pulses in a conductive shield surrounding a power cable wherein the conductive shield is connected to a system ground. Nothing in the cited references indicate or even suggests using the inductive sensors in either Frus or McQueeney for detecting current pulses in a conductive shield surrounding a power cable wherein the conductive shield is connected to a system ground. Power cable shields aren't even mentioned in these two references. McQueeney clearly states in column 6, line 49, "RLC circuit 302 is adapted for the coil-on-plug 316 ... ". Thus, clearly it would not have been obvious to a person of ordinary skill in the art at the time the invention was made to further modify McQueeney et al. in view of Frus, to design the PLC circuit so that it amplifies an voltage across the capacitor of the PLC circuit, as taught by Hayt et al., for the purpose of providing an amplified output to compensate for diminished available flux due to the use of additional shielding around the power cable and the

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igniter (McQueeney reference, column 8, lines 45-50) because none of the cited references teaches using the inductive sensors for detecting current pulses in a conductive shield surrounding a power cable wherein the conductive shield is connected to a system ground and McQueeney clearly states RLC circuits are to be used for coils of the coil-on-plug and not shields surrounding power cables.

3. The Applicants respectfully submit that all the rejections under 35 U.S.C. 103(a) have been traversed by the remarks above and request reconsideration and allowance for Claims 1-3, 7-10 and 19-20 and request that they be passed on to issue.

Respectfully submitted,

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